

MODULE TITLE

COMPUTER AIDED MAINTENANCE

One Module

Module Code or Number

Module Purpose

To enable students to select and implement computerised applications, including the cataloguing of plant items, forecasting preventative and predictive maintenance, and

Relationship to

This module will be modified in line with the requirements of the National Metals and Engineering Standards when they become available.

and agreed by all states/territories. It has been developed on the assumption that these will be reflected in the

Prerequisites

NBB04

Summary of Content

1.
 - maintenance management objectives
 - responsibilities of management
 -
 - preventative maintenance
 - predictive maintenance
 -
2. Computerised Maintenance Systems
 - software and hardware requirements
 -
 - justification of computerised systems

3. Planning, Plant Numbering and Data Collection
 - plant numbering systems
 - ways of collecting data
 - create specific forms of data collection
 - plan a common and uniform approach to input data
 - create flow charts for the input of data
4. Structuring and Data Input
 - organise plant into hierarchical order
 - using maintenance management software
 - input data
5. Preventative and Predictive Maintenance
 - selection of appropriate equipment to suit each category
 - setting equipment on computer for each strategy
 - failure patterns of equipment
6. Equipment History and Costs
 - retrieve from computer plant history and costs
 - retrieve from computer plant costs through the hierarchical structure.

Delivery

Learning outcomes

Learning outcome 1

Assessment criteria

Conditions

Assessment method

On completion of this module the student will be able to:

Describe maintenance management principles.

1. Identify and state applications for maintenance systems
2. State the functions that maintenance management departments are responsible for
3. Identify the relationship between the maintenance department and other departments.

Presentation

Justify the implementation of a computerised maintenance management system for a range of

Assessment criteria

Prepare a project report justifying the implementation of a report should also contain the software and hardware requirements and the associated costs.

Assessment method

Project

Carry out procedures to identify plant and collect maintenance information to assist in the management system.

Assessment criteria

Select the most efficient and appropriate numbering system for a range of equipment.

Create specific forms for the collection and input of data onto computerised maintenance management

Conditions

Assessment method

Learning outcome 4

Be able to catalogue plant items to allow efficient management system.

Assessment criteria

Structure items of plant into a workable hierarchical

2. Produce an equipment register of plant items on a

Conditions

Assessment method

Learning outcome 5

Forecast using predictive and preventative methodologies for engineering plant and equipment.

Assessment criteria

1. Create a report showing a range of equipment that preventative and predictive maintenance would be performed on. Give reasons for choosing each piece of equipment.
2. Set up a preventative and predictive maintenance program using maintenance management software.
3. Forecast preventative and predictive maintenance tasks using maintenance management software.

Conditions

Assessment method

Project

Learning outcome 6

With computer assistance generate plant history and maintenance costs.

Assessment criteria

1. Produce plant history and costs reports from a computerised maintenance management system.
2. Using a computerised maintenance management system produce reports that plant replacement decisions can be made on.

Conditions

Assessment method

Project

**Suggested Learning
Resources**

Kelly, Anthony, *Maintenance and its Management* (1989),
EIT Publications

Patton, Joseph, *Preventative Maintenance* (1983)

Higgins, Lindley R, *Maintenance Engineering Handbook*
(1988), McGraw Hill Inc. USA

Winter, John L, *Maintenance Management for Quality
Control* (1984) SME

Dekker, Benjamin W, *Engineering Maintenance
Management*, APICS Publications

Maintenance Australia & New Zealand Journal, EIT
Publications

SMR Journal

Works Manager Journal

LEARNING OUTCOME 1

A SUMMATIVE ASSESSMENT

Information to the Student

Presentation

This presentation is designed to relate the information given to the students on maintenance principles and systems to their own workplace.

It is expected to pass on the information contained in the presentation to the rest of the group, as an oral presentation may not be suitable to all students there will be a lecturer directed group discussion. You may use any type of presentation technique to pass on the information, i.e. video, demonstration etc. You will provide the lecturer with a written outline of your presentation for assessment.

Students will provide a presentation that covers the following topics:

- (a) A clear and precise description of at least three (3) types of maintenance systems and the practical applications that these maintenance systems suit.
- (b) Identify the primary and secondary functions of a maintenance department.
- (c) Identify and describe the relationship between the maintenance department and other departments within the organisation's structure.

NOTES OF ASSESSMENT

LEARNING OUTCOME 1

A SUMMATIVE ASSESSMENT

Information to the Lecturer

Presentation

This presentation is designed to relate the information given on maintenance principles and systems to their own workplace.

Students will provide a presentation that integrates the information given on maintenance principles and systems with information gained from their own workplace.

It is expected that a group discussion will aid in developing the student's knowledge by reviewing the maintenance principles and systems over the group's diverse range of industrial applications.

As an oral presentation may not be suitable to all students, the group discussion will be lecturer directed. The use of all methods of presentation will be encouraged.

The presentation should contain the following:

(a) A clear and precise description of at least three (3) types of maintenance systems and the practical applications that these maintenance systems suit.

(b)

Identify the primary and secondary functions of a maintenance department. {

(c) Identify and describe the relationships between the maintenance department and the other departments within the organisational structure.

NOTES OF ASSESSMENT

LEARNER OUTCOME 2, 3, 4, 6 and 6

A SUMMATIVE ASSESSMENT

Instructions to the Student

Project

This project/report is designed to include all aspects required in the selection and implementation of a computerised maintenance management system to suit a range of industrial applications.

This project/report is to be a combination of a theoretical plant (usually based on the student's workplace) set up on a computerised maintenance system and supported by documentation outlining the procedures used for selection and implementation of the system.

The project on the computerised maintenance management system will contain a minimum of 40 plant items (i.e. pumps, gearboxes etc.) which have to be set up in a hierarchical order. The following details should be included on the computer system:

- Details of plant items
- Departments/divisions etc.
- Locations/areas etc.
- Plant structures
- Department structures
- Preventative maintenance tasks
- Predictive maintenance tasks
- Corrective maintenance tasks
- Stores stock for plant
 - Inventory control
 - Inventory suppliers

This project/report incorporates learning outcomes 2, 3, 4, 5 and 6 and is to be assessed at the end of the module. It is recommended that you seek the lecturer's opinions on your work throughout the module.

It is important that the following information is contained in your project/report:

(a) The software and hardware that would best suit your application.

The software could be from the packages viewed during the module or viewed in industry.

The hardware must meet the software and your particular applications needs, mention number of computers, terminals, printers etc.

(b) Justification for implementing a computerised maintenance system including costs.

- Reasons for implementing a computerised system.
- Benefits to be gained from a computerised system. g Costs of computerisation and possible cost savings.

(c) The numbering system chosen for your application is workable in industry
the numbering system meets the requirement of the plant and computer software;
the numbering system meets the requirements of all departments in industry.

(d) The forms created for data collection and input
the forms for data collection meet the requirements of the software and the chosen plant;
the forms created for data input are created in a way that anyone could use them and input data on the computer;

- all features of the software are utilised.

(e) The plant and plant structure chosen for your application meets the following requirements:

the plant is broken down in its hierarchical structure to the most economic level and workable in industry;

a minimum of 40 plant items are to be used.

(f) The information is entered onto the computer in a common and uniform approach.

the correct terminology is used; the plant is entered onto the computer correctly.

(g) Equipment chosen for preventative and predictive maintenance and the reasons for choosing the equipment.

equipment chosen is workable in industry;

reasons for choosing the equipment and strategy are valid, based on equipment failure rates and workable in industry.

(h) Equipment is set up on the computer in the correct manner. Relevant safety and general procedures are added to tasks. All spares for tasks are to be put onto computer.

all Occupational Health and Safety information is to be included

(i) Produce reports from the computerised maintenance management program showing work history of plant items and indicate their value to industry.

(j) Produce reports from the Computerised Maintenance Management Program showing plant cost reports of plant items and indicate their value to industry.

(k) From the reports produced indicate how these reports can be used to identify economical plant replacement decisions.

NOTES OF ASSESSMENT

LEARNER OUTCOME 2, 3, 4, 5 and 6

A SUMMATIVE ASSESSMENT

Notes to the Lecturer

Project

This project/report is designed to include all aspects required for the selection and implementation of a computerised maintenance management system to suit a range of industrial applications.

This project/report covers learning outcomes 2, 3, 4, 5 and 6 and is to be assessed at the end of the module. The lecturer should monitor the students' progress throughout the module as each learning outcome builds on the previous one. If there is an error at the start it will compound as the module continues.

It is important that the information contained in the following sections is accurate.

m The numbering system chosen meets the requirements of the plant and computer software.

- The information being entered onto the computer is consistent.